UTILITY PATENT APPLICATION

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Title of Invention: **Trailer Mounted Automatic Livestock Feeding Apparatus**

TITLE OF THE INVENTION

Trailer Mounted Automatic Livestock Feeding Apparatus

CROSS REFERENCE TO RELATED APPLICATIONS

Provisional Patent Application, Serial No. 60/446,828, filed February 12, 2003.

I. Background of the Invention

1. Field of Invention

A trailer mounted automatic livestock feeder for feeding livestock in a field employing a timed feeding mechanism allows a rancher to fill the feeder storage bin with bulk feed pellets or granular feed products at a bulk feed location, tow the feeder to location where livestock are fed and to set a timer located on the feeder to feed livestock at a set time distributing a controlled amount of feed pellets to a perimeter trough located on the feeder trailer for several days, or until the amount of feed pellets are depleted. The feeder is provided with shielding that prohibits the livestock and wild animals from access to the feeder storage bin, and is also provided with a rechargeable solar battery power supply allowing for use of the feeder in remote rural locations where there is no electrical power.

2. Description of Prior Art

The following United States patents were discovered and are disclosed within this application for utility patent. All relate to livestock feeding devices or devices used to feed game. U.S. Patent No. 3,742,913 to Crippen, discloses an automatic animal feeder that dispenses dry animal food at predetermined set time intervals, the feeder having a timer, a bin leading to a hopper having a funnel shaped bottom, a rotating turntable and a circular shelf that slants towards a leading trough. In U.S. Patent No. 3,678,902 to Ruth, a timed animal feeder having a housing, slinger plate, additional skirt and timing via a light detector is disclosed.

Other notable patents located include U.S. patent No. 6,427,628 to Reece, 6,227, 143 to Papkov, which includes a hopper, trough, splitter and timer, U.S. Patent No. 5,908,007 to Dunn, which includes a

solar power unit for a power supply, U.S. Patent No. 5,275,129 to Vigesaa, which is solar powered and portable, and U.S. Patent No. 4,989,547 to Eaton, which also includes solar power.

II. Summary of the Invention

In the livestock business, especially in areas where the winters are long and severe, a means of providing feed to livestock without having to tend to the herd daily is desired in order to prevent daily feeding of cattle and also reducing the amount of human effort in delivering and dispensing pellet feed materials. It would serve the rancher to provide a device which could be filled with several days worth of pellet feed in bulk in a device that may be filled at a bulk feed location and taken to a remote rural area where livestock are kept and fed without the need to manually transfer or handle feed. The device would also be preferred as one which would maintain a measured feed supply for several days between filling the device with pellet feed and depleting the stored amount of pellet feed, making human intervention required only weekly or longer, depending on the size of the livestock herd. In addition, providing the device with a self-contained and replenishable power supply would allow for the device to operate without utility, fuel consumption or maintenance required with a fuel consuming engine.

The primary objective of the invention is to provide an automatic livestock feeding apparatus which is mounted on a trailer for portability which may be loaded with bulk amounts of pellet feed and transported to a rural location where the livestock are kept. A second objective is to provide the apparatus with a means of feeding a measured amount of pellet feed at a programmed time during the day which is adjusted to the size of the livestock herd and their daily feeding requirements. A third objective of the invention is to provide the apparatus in such size and volume as to allow for several days worth of automatic feeding with a replenishable power supply, preferably a rechargeable solar battery supply, which requires no external power supply.

Several other objectives and savings of time and effort are accomplished by the apparatus, including not having to travel from home to pasture for daily feeding, not having to handle feed sacks in the presence

of hungry and sometimes aggressive livestock, the hazards of travel to pastures in inclement weather, and feed waste, since feed is dispensed and retained in the trough instead of on the ground where the livestock walk.

Further advantages include the apparatus being trailer mounted which means the device can be filled at the local feed store with bulk feed, which is generally cheaper than bag feed, and then hauled to the pasture for setup and feeding. The apparatus can be moved with the herd. The timer and solar battery require no present power source at the feeding location. At least one stabilizer jack prevents the livestock from moving or shaking the apparatus when set, and the enclosure of the bin structure prevents the apparatus from being raided by wild animals who might choose to feed on the livestock feed, the feed being limited to access at the trough only. In addition, the closure means on the bin structure allows for the storage bin to be shut during transport to prevent loss of feed during transport which would otherwise be jostled from the storage bin during movement and transport.

III. Description of the Drawings

The following drawings are submitted with this utility patent application.

Figure 1 is a front perspective view of the livestock feeding apparatus.

Figure 2 is a side cross sectional view of the apparatus.

Figure 3 is an upper view of the apparatus with the storage bin lid removed showing the internal portion of the storage bin.

Figure 4 is a drawing of the timer mechanism.

Figure 5 is a top view of the lateral distribution plate.

Figure 6 is a perspective view of the bin closure mechanism.

Figure 7 is a front view of the battery and timer mechanism recess with the recess door open.

IV. Description of the Preferred Embodiment

A trailer mounted automatic livestock feeding apparatus **10** is provided for portable bulk pellet or granular feed distribution to livestock in remote rural pastureland, the apparatus **10** comprising a trailer portion **20**, FIGS.1-3, having a tongue **22**, at least one stabilizer jack **23**, a hitch **24**, a bed **25**, and at least one two wheeled-axle **27**, the bed **25** having an upper surface **26** upon which is mounted a base **30**, FIGS. 1-3, forming a trough **32** having an external ridge **33**, a partial pyramid shaped incline ramp **34** terminating in a flat portion **35** having a central aperture **36**, an upper surface **37** and a lower surface **38**, FIG. 2, an electric motor **40** mounted to the lower surface **38** of the flat portion **35**, the electric motor **40** having a drive shaft **42** projecting upward through the central aperture **36** of the flat portion **35**, FIG. 2, a lateral distribution plate **50** having an upper surface **52** with a plurality of radial ridges **54**, FIG. 5, the lateral distribution plate **50** also having a central bore **56** adapted to engage the drive shaft **42** of the electric motor **40**, a bin structure **60**, comprising a front section **62**, two side sections **64** and a rear section **66** having a rear access panel **67**, at least four outer support legs **68** which support the bin structure **60** over the incline ramp **34** leaving a slight space between the bin structure **60** and the incline ramp **34** sufficient to allow the passage of feed pellets or granular feed, FIGS. 1-2, the support legs **68** having a lower end **69** attached through the incline ramp **34** to the base **30** providing support to the bin structure **60**, the bin structure **60** further having a lower portion **70** including a tapered tetrahedral bin floor section **72** terminating into a drop port **74**, FIG. 3, which includes a manually operated closure means **80**, FIG. 6, to open and close the drop port **74**, and an upper portion **90** having a storage bin **92** defined by the front section **62**, side sections **64**, rear section **66** and bin floor section **72**, the upper portion **90** having a solar cell **94**, FIGS. 1-2, and a retractable storage bin door **96** providing access to the storage bin **92**, the lower portion **70** further providing the front section **62** having a battery and timer mechanism recess **100** covered by a hinged recess door panel **102**, the battery and timer mechanism recess **100**, FIG. 7, containing a rechargeable solar battery **110** connected by electrical wiring **115** to the solar cell **94** on the upper portion **90**, and a programmable timer **120**, FIGS. 4 and 7, connected to the

rechargeable battery **110** which provides electrical power to the electrical motor **40.**

The trailer portion **20** is further defined as having ramped wheel wells **28** which prohibit feed from being trapped behind the wheel wells **28**, directing any feed in an outward direction to the trough **32**, as indicated in FIG. 3 of the drawings. The upper portion **90** of the bin structure **60** is further defined as having a bin door retaining brace **98**, FIG. 1-2, which serves to support the storage bin door **96** when open and also to protect the solar cell **94** from contact with the storage bin door **96** when the storage bin door **96** is being opened, also protecting the solar cell **94** from impact when loading the storage bin **92** with feed materials.

The closure means **80**, shown in FIG. 5 of the drawings, at the drop port **74** is further defined as comprising a slotted drop port frame **81** attached to the drop port **74**, a slide plate **82** slidably engaged with the slotted drop port frame **81**, a slide plate arm **83** having a first end **84** attached to the slide plate **82**, a second end **86** forming a handle **88** and an intermediate pivot joint **85** located between the first end **84** and second end **86.** The second end **86** and handle **88** extend through the front section **62** as indicated in FIGS. 1-2.

More specifically, the apparatus **10** includes the following specifications for the components for the best mode of operation. In order for the storage bin **92** to contain sufficient feed for a long term feeding without attendance, the storage bin **92** would ideally contain up to 2400 pounds of feed, requiring the inner dimensions of the storage bin **92** to be at least five feet by five feet square, plus the area of the tapered floor section **72.** In order to support the weight of the apparatus **10** and the contained feed when full, the two wheeled axle **27** should be at least a 3500 pound axle with springs, and a 2" bull-dog type hitch is preferred as the hitch **24.** The base **30** and bin structure **60** are preferably made from at least 12 gauge sheet metal and at least 3" x 3" x 3/16" angle iron. The drop port **74** dimensions are most preferably 6" x 6".

The solar cell **94** should be at least a five watt solar cell and be located on the apparatus **10** as indicated in FIG. 1 for optimal exposure to the sun. The electrical motor **40** should be preferably a Dayton DC electrical motor that turns at 103 RPM, and the lateral distribution plate **50** should have a cross sectional

diameter of at least 18", which would allow for approximately seven pounds of feed to be distributed to the trough **32** each second.

The programmable timer **120** should have a capability of feeding from one to eight times per day, depending on the size and feeding requirements of the livestock herd. The programmable timer **120** should also have a the capability of adjusting the length of time of each feeding. The lateral distribution plate **50** may also include an outer peripheral rim (not shown) to prevent feed from being jostled off the upper surface **52.** In addition to a stabilizer jack **23** on the tongue **22** of the trailer portion **20**, a second stabilizer jack may be attached to the trailer portion **20** behind the bin structure **60**, as shown in FIG. 2 of the drawings.

While the apparatus **10** has been particularly shown and described with reference to a preferred embodiment thereof, it will be understood by those skilled in the art that changes in form and detail may be made therein without departing from the spirit and scope of the invention.

What is claimed is: